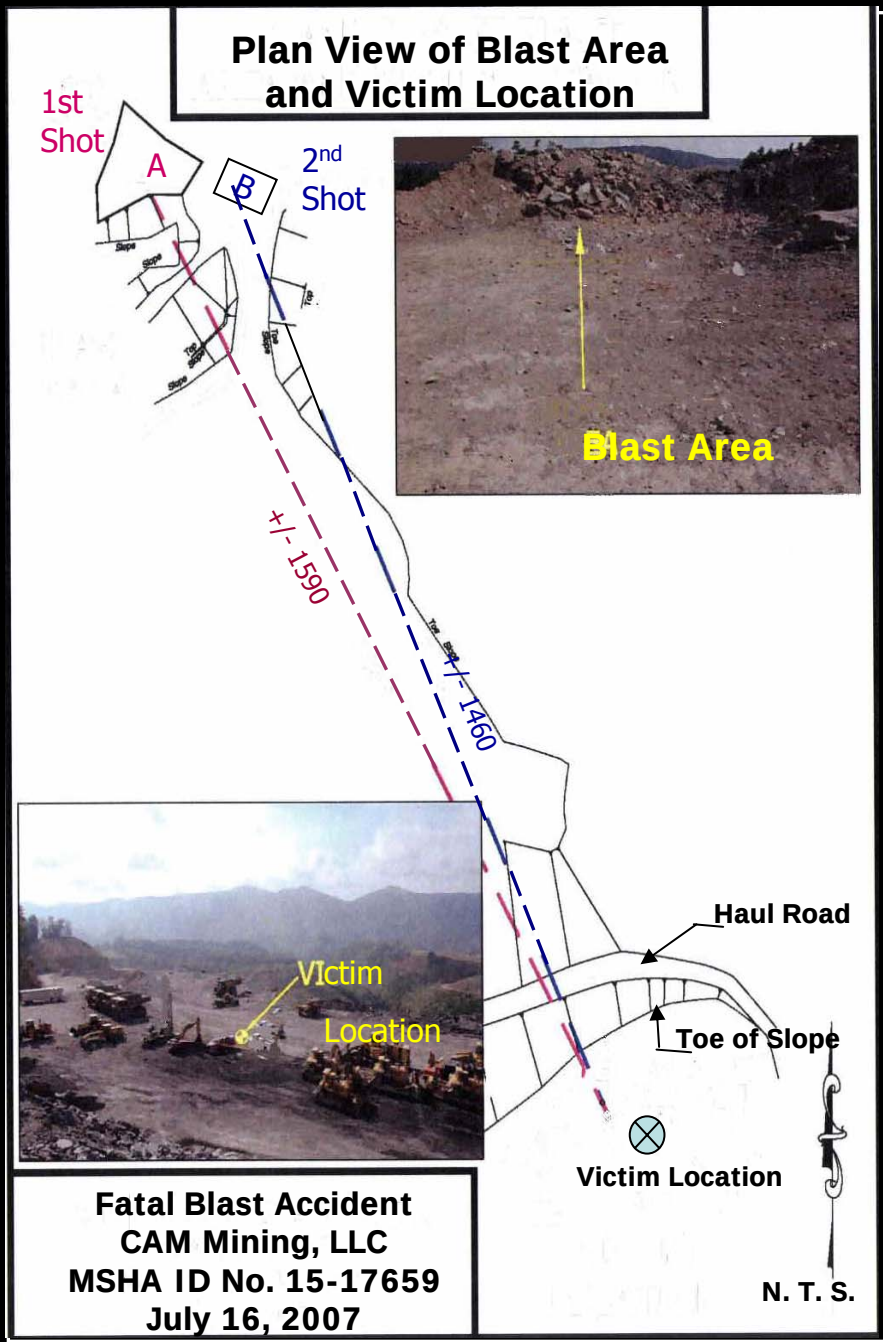
*This presentation is for illustrative and **general** educational purposes only and is not intended to substitute for the official MSHA Investigation Report analysis nor is it intended to provide the sole foundation, if any, for any related enforcement actions.*

GENERAL INFORMATION

Coal Mine Fatal Accident 2007-09

Operator:	CAM Mining, LLC
Mine:	Three Mile Mine #1
Accident Date:	July 16, 2007
Classification:	Surface Explosives and Breaking Agent
Location:	Dist. 6, Pike County, Kentucky
Mine Type:	Surface Coal Mine
Employment:	45
Production:	≈ 60,000 clean tons/month

ACCIDENT DESCRIPTION



At approximately 4:35 p.m. on July 16, 2007, a 40-year old mechanic received fatal injuries when he was struck by fly rock from a production blast. The victim had 20 years of mining experience, 10 years of which was at this mine. The fly rock that struck the victim traveled approximately 1,500 feet, into an area where miners parked their personal vehicles and mine equipment between shifts. The fly rock passed over a 50 foot embankment prior to reaching the accident site. Although several pieces of fly rock were found at the accident site, the size of the rock that struck the victim could not be determined. The accident occurred because safe procedures for conducting blasting operations were not followed.

ROOT CAUSE ANALYSIS

Root Cause: Effective policies and procedures were not in place to ensure that an adequate blast area was provided. The mine operator did not protect or remove persons from areas where there was a potential for fly rock. The area near the blasting operations where flying material could reasonably be expected to cause injury was not increased to protect persons even though abnormal conditions were known to exist.

Corrective actions: The mine operator developed and implemented a plan to prevent a similar occurrence of this accident. The plan includes a revision to the ground control plan that stipulates that all persons within 2000 feet of the blast site will be in shelters and that the shelters will be at least 1000 feet from the blast site. The plan also requires training to be provided to the employees on the revised ground control plan and hazards associated with blasting operations.

ROOT CAUSE ANALYSIS Cont'd.

Root Cause: **The mine operator did not maintain safe control of the mining pit. Fly rock from the mining pit traveled more than 1500 feet to a staging area where equipment was being fueled and routine service was being performed. No procedure was in place to demarcate the 'Blast Site' from other production areas during the load-out crews overburden removal procedures. This increased the probability that the highwall would be 'Over Dug,' reducing the burden from its original thickness. The type of fly rock that occurred at this site was the result of insufficient burden at the opening of the blast #1 (the first blast holes that were detonated.)**

Corrective actions: **The mine operator developed and implemented a plan to prevent a similar occurrence of this accident. The plan includes a revision to the ground control plan that requires that the drillers log the blast holes as they are drilled and provide this log to the blaster who will include this log with the blast report. The revision also requires that adequate burden along the edge and free face of the blast site equal to or greater than 25 times the hole diameter (measured in inches) divided by twelve and that the burden along the edges of the blast site will be measured with a burden pole. The plan also requires training to be provided to the employees on the revised ground control plan and hazards associated with blasting operations.**

ENFORCEMENT ACTIONS

104(d)(1) Citation No. 7428799 was issued to CAM Mining LLC for a violation of 30 CFR, §77.1303(h)

Condition or Practice: The mine operator did not ensure that all persons were cleared from the blast area or were in shelters. Additional precautions were not taken to increase the secure area from a blast site which contained blast holes which were known to be cracked or "busted up." The area near the blasting operations where flying material could reasonably be expected to cause injury was not increased to account for the abnormal conditions which were known to exist in the blast holes.

A 104(a) Citation No. 7428800 was issued to CAM Mining LLC for a violation of 30 CFR, §77.1000.

Condition or Practice: The mine operator's established ground control plan was not adequate to provide safe control of the mining pit. Evidence indicates that drilling and blasting precautions were not taken to provide adequate burden to prevent blow-out of blast holes along the edge of the blast site. Material was excavated from the area adjacent to the blast creating a free face and reducing the burden between the holes and the free face where evidence indicates that one or more blast hole "blew out" creating fly rock.

Best Practices

- Consider mine specific conditions and rock strata when designing blasts to prevent fly rock. Closely follow mine policies and procedures through all phases of the blasting operation.
- Maintain and use all available methods of communication, such as sirens and radios, to warn persons of impending blasting operations.
- Schedule blasting between shifts or on off-shifts. Utilize suitable blast shelters for all persons at the mine site during blasting.
- Take special precautions to ensure that all roadways and regularly traveled areas are blocked to prevent access by persons unaware of an impending blast.